

CLAIMS

What is claimed is:

- 1 1. A method for monitoring fly height between a magnetic recording medium and a
2 transducing head, comprising:
3 calculating a magnetic spacing change value relative to the recording medium and
4 the transducing head; and
5 adjusting the magnetic spacing change value as necessary to reflect transducing
6 head wear.
- 1 2. A method in accordance with Claim 1 wherein said magnetic spacing change
2 value is calculated from media noise sensed on the recording medium.
- 1 3. A method in accordance with Claim 2 wherein said media noise is processed so as
2 to be substantially free of electronic power spectra noise generated by read channel
3 circuitry associated with the transducing head.
- 1 4. A method in accordance with Claim 2 wherein said magnetic spacing change
2 value is calculated after decomposing said media noise into frequency components using
3 a Fast Fourier Transform conversion process.

1 5. A method in accordance with Claim 2 wherein said magnetic spacing change
2 value is calculated after decomposing said media noise into frequency components using
3 a spectrum analyzing process.

1 6. A method in accordance with Claim 2 wherein said magnetic spacing change
2 value is calculated using at least two frequency components of said media noise.

1 7. A method in accordance with Claim 1 wherein transducing head wear is
2 determined by measuring transducing head signal amplitude after accounting for changes
3 in amplitude due to conditions other than transducing head wear.

1 8. A method in accordance with Claim 1 wherein the transducing head comprises a
2 magnetoresistive (MR) read sensor and transducing head wear is determined by
3 measuring a change in MR stripe height of the read sensor while using measured
4 resistance of a write coil component of the transducing head to correct for temperature
5 drift.

1 9. A method in accordance with Claim 8 wherein a change in fly height is calculated
2 as the difference between the magnetic spacing change value and the change in MR stripe
3 height.

1 10. A method in accordance with Claim 1 wherein the magnetic recording medium
2 comprises magnetic tape and the transducing head is a tape head.

1 11. A system for monitoring fly height between a magnetic recording medium and a
2 transducing head, comprising:
3 first means for calculating a magnetic spacing change value relative to the
4 recording medium and the transducing head; and
5 second means for adjusting said magnetic spacing change value as necessary to
6 reflect transducing head wear.

1 12. A system in accordance with Claim 11 wherein said first means is adapted to
2 calculate said magnetic spacing change value from media noise sensed on the recording
3 medium.

1 13. A system in accordance with Claim 12 wherein said first means is adapted to
2 process said media noise so as to be substantially free of electronic power spectra noise
3 generated by read channel circuitry associated with the transducing head.

1 14. A system in accordance with Claim 12 wherein said first means is adapted to
2 calculate said magnetic spacing change value after decomposing said media noise into
3 frequency components using a Fast Fourier Transform conversion process.

1 15. A system in accordance with Claim 12 wherein said first means is adapted to
2 calculate said magnetic spacing change value after decomposing said media noise into
3 frequency components using a spectrum analyzing process.

1 16. A system in accordance with Claim 12 wherein said first means is adapted to
2 calculate said magnetic spacing change value using at least two frequency components of
3 said media noise.

1 17. A system in accordance with Claim 11 wherein said second means is adapted to
2 determine transducing head wear by measuring transducing head signal amplitude after
3 accounting for changes in amplitude due to conditions other than head wear.

1 18. A system in accordance with Claim 11 wherein the transducing head comprises a
2 magnetoresistive (MR) read sensor and said second means is adapted to determine
3 transducing head wear by measuring a change in MR stripe height of the read sensor
4 while using measured resistance of a write coil component of the transducing head to
5 correct for temperature drift.

1 19. A system in accordance with Claim 18 wherein said second means is adapted to
2 calculate a change in fly height as the difference between the magnetic spacing change
3 value and the change in MR stripe height.

1 20. A system in accordance with Claim 11 wherein the system is embodied in one of
2 a data storage system or a test apparatus for characterizing recording heads or recording
3 media.

1 21. A method for monitoring fly height between a magnetic recording medium and a
2 transducing head, comprising:
3 sensing media noise on the recording medium; and
4 calculating a magnetic spacing change value from the media noise.

1 22. A method in accordance with Claim 21 wherein said media noise is generated by
2 forming a substantially random pattern of magnetic domains on the recording medium
3 using one of an A.C. erasure technique, a D.C. erasure technique or a bulk erasure
4 technique.

1 23. A method in accordance with Claim 21 wherein said media noise is processed so
2 as to be substantially free of electronic power spectra noise generated by read channel
3 circuitry associated with the transducing head.

1 24. A method in accordance with Claim 21 wherein said magnetic spacing change
2 value is calculated after decomposing said media noise into frequency components using
3 a Fast Fourier Transform conversion process.

1 25. A method in accordance with Claim 21 wherein said magnetic spacing change
2 value is calculated after decomposing said media noise into frequency components using
3 a spectrum analyzing process.

1 26. A method in accordance with Claim 21 wherein said magnetic spacing change
2 value is calculated using at least two frequency components of said media noise.

1 27. A method in accordance with Claim 21 further including adjusting magnetic
2 spacing change value as necessary to reflect transducing head wear.

1 28. A method in accordance with Claim 27 wherein transducing head wear is
2 determined by measuring transducing head signal amplitude after accounting for changes
3 in amplitude due to conditions other than head wear.

1 29. A method in accordance with Claim 27 wherein the transducing head comprises a
2 magnetoresistive (MR) read sensor and transducing head wear is determined by
3 measuring a change in MR stripe height of the read sensor while using measured
4 resistance of a write coil component of the transducing head to correct for temperature
5 drift.

1 30. A method in accordance with Claim 29 wherein a change in fly height is
2 calculated as the difference between the magnetic spacing change value and the change in
3 MR stripe height.

1 31. A system for monitoring fly height between a magnetic recording medium and a
2 transducing head, comprising:
3 first means for sensing media noise on the recording medium; and

4 second means calculating a magnetic spacing change value from the media noise.

1 32. A system in accordance with Claim 31 wherein said media noise is corresponds to
2 a substantially random pattern of magnetic domains on the recording medium using one
3 of an A.C. erasure technique, a D.C. erasure technique or a bulk erasure technique.

1 33. A system in accordance with Claim 31 wherein said first means is adapted to
2 process said media noise so as to be substantially free of electronic power spectra noise
3 generated by read channel circuitry associated with the transducing head.

1 34. A system in accordance with Claim 31 wherein said first means is adapted to
2 calculate said magnetic spacing change value after decomposing said media noise into
3 frequency components using a Fast Fourier Transform conversion process.

1 35. A system in accordance with Claim 31 wherein said first means is adapted to
2 calculate said magnetic spacing change value after decomposing said media noise into
3 frequency components using a spectrum analyzing process.

1 36. A system in accordance with Claim 31 wherein said first means is adapted to
2 calculate said magnetic spacing change value using at least two frequency components of
3 said media noise.

1 37. A system in accordance with Claim 31 wherein said second means is further
2 adapted to adjust the magnetic spacing change value as necessary to reflect transducing
3 head wear.

1 38. A system in accordance with Claim 37 wherein said second means is adapted to
2 determine transducing head wear by measuring transducing head signal amplitude after
3 accounting for changes in amplitude due to conditions other than head wear.

1 39. A system in accordance with Claim 37 wherein the transducing head comprises a
2 magnetoresistive (MR) read sensor and said second means is adapted to determine
3 transducing head wear by measuring a change in MR stripe height of the read sensor
4 while using measured resistance of a write coil component of the transducing head to
5 correct for temperature drift.

1 40. A system in accordance with Claim 39 wherein said second means is adapted to
2 calculate a change in fly height as the difference between the magnetic spacing change
3 value and the change in MR stripe height.